

Dr. Spilhaus began his public service with the U.S. Army Air Corps, 1943-46, during which time he contributed to the development of meteorological equipment including radar and radio upper wind finding instrumentation, work for which he was awarded the Legion of Merit in 1946. He was Scientific Director of Weapons Effects of two Nevada Nuclear Tests in 1951, and has received Presidential appointments from Presidents Eisenhower, Kennedy, and Johnson. He was a member of the National Science Board from 1966-1972.

Whiting Gutting Machine Found

Experimental results at the NMFS Atlantic Fishery Products Technology Center have shown that there is a commercial machine available to remove completely the guts and black belly lining from headed whiting, prior to further processing. The machine can clean whiting up to one pound and with minor adjustments, be made to handle larger fish. Recoveries of between 66-81 percent have been obtained from headed whiting, depending upon size.

For further information or for a demonstration of the machine, contact Joseph M. Mendelsohn or Thomas J. Connors at the NMFS Atlantic Fishery Products Technology Center, Emerson Avenue, Gloucester, MA 01930 (Telephone: 617-283-6600).

Atlantic Squid Studied

As part of the New England Fisheries Development Program a commercial fishing vessel, the *Valkyrie*, of New Bedford was chartered early this year by the National Marine Fisheries Service to demonstrate fishing and measure production rates during fishing for long-finned squid, *Loligo pealei* off southern New England. U.S. interest in squid fishing has grown since 1968 when the Japanese began experimental fishing for squid off New York.

Since that time, activity in squid harvesting has progressed rapidly. Early in 1974 there were over 30 foreign vessels fishing south of New England for squid. Most of the fishing for long-finned squid by foreign vessels takes place near the edge of the Continental Shelf during the cooler months (December-April) when the squid have aggregated there to escape intolerable temperatures inshore. Surveillance observations and information from other sources indicate that the catch rate by the foreign fleet, most of which are large freezer trawlers with over 2500 hp ranges from about 4 to 12 tons per day.

The *Valkyrie*, a 100-foot stern trawler with 700 hp, was chartered for four fishing trips during January and February. During 24 days of fishing, 223 two-hour tows were made with high-opening bottom trawls. Over 168,000 pounds of squid were captured at an average rate of 380 pounds per fishing hour. The daily catch rate was 3.5 tons per day for

Foreign Fishery Developments

ROK Fisheries Show "Significant Advances"

The Republic of Korea (ROK) has made significant advances in the fisheries sector in recent years. The country's harvest of fishery products in 1972 totaled 1,343,569 metric tons, surpassing the record 1971 catch of 1,073,733 tons by 25.1 percent, according to the Japan External Trade Organization's (JETRO) report based on data compiled by the ROK Office of Fisheries.

CATCH

South Korea harvested 1,343,569 metric tons of fishery products valued at 107,574 million won (approximately US\$268.9 million, based on 400 won = US\$1) in 1972. This is an increase of 25.1 percent in quantity and 22.2 percent in value over 1971. The high-seas fisheries produced 224,135 tons, coastal fisheries (in-

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The experience now provides some production and market data which will better enable the fishing industry to evaluate potential use of this unique resource. Under ICNAF allocations the U.S. is authorized to harvest 5,600 tons of squid from North Atlantic waters. The 1973 catch was less than one-third of this amount.

In addition to squid, the New England Fisheries Development Program is looking into development of other resources not fully utilized by U.S. fishermen, such as offshore crabs (red and Jonah) and fish species discarded from trawl operations. The program was initiated in 1973 in an attempt to offset the reduction of available resources as a result of overfishing.

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PROCESSED FISH PRODUCTS

Korean production of processed seafoods amounted to 161,846 tons in 1972 (31.1 percent above the 1971 output). Raw material supplied to processors totaled 405,787 tons.

EXPORTS

Korea exported \$152,560,000 worth of fishery products in 1972, a 32.7 percent increase over the 1971 export

value of \$114,980,000. Fishery products represented 8.4 percent of the country's total export trade valued at \$1,800 million. Tuna, the leading export, accounted for \$68,030,000 (44.8 percent) and live and fresh fish netted \$27,366,000 (17.8 percent) of the fishery exports. Japan received \$72.54 million (47 percent) of the value of Korea's fishery exports, and the United States took \$36,387,000 (23.9 percent) of the total. In the future, Korea plans to develop export markets in southeast Asia.

Japan Likes Roe of Mexican Sea Urchins

Fresh sea urchin roe is being air-freighted from Mexico to Japan by two Japanese firms. Taiyo Fisheries Company ships the product to Sapporo, Hokkaido and Sato Shoten (trading company) flies shipments to the Tokyo Central Wholesale Market via Los Angeles. Urchin roe from Mexico are favored because of their low prices, reported to be about one-third of that for the Japanese domestic product. The two firms, which

POPULATION AND THE FISHING FLEET

At the end of 1971, the Korean fisheries industry comprised 205,000 households and a population of 1,229,000 persons (including fish processors). The number of fishermen was 391,800. ROK fishing fleet at the end of 1971 totaled 68,269 vessels representing 392,649 gross tons. Powered vessels comprised 21 percent and nonpowered vessels 79 percent of the total fleet.

Source: *Suisan Tsushin*, January 18, 1974.

operate processing plants in Mexico, began shipping urchin roe in 1973. Sato Shoten is reported to have concluded a long-term contract with the Mexican Government for the harvesting and processing of "Murasaki" urchin, which are present in abundance along the coast of Mexico.

Japanese wholesale prices for sea urchin roe at the Tokyo Central Wholesale Market were reported as shown below on the specified dates.

Domestic Supply

Imports

Date	Quantity (No. Trays) ¹	Price per Tray ²			Quantity (No. Trays)	Price per Tray ² (US\$)
		White, Large	Red, Large	Red, Small		
Feb. 13	7,300	4.48-8.62	5.17-6.90	2.93	2,700	1.55-5.17
Feb. 22	4,500	2.76-5.52	3.45-5.17	2.76	4,500	1.38-3.10
Feb. 26	1,600	5.17-7.93	5.52-6.90	—	2,400	2.24-5.17
Mar. 8	6,000	5.17-6.21	4.83-6.21	2.41-3.45	1,200	2.07-4.14

¹ One tray is approximately 200 gm (0.44 lb) net weight. Wide price range is presumably due to the condition of roe on arrival at the market.

² Dollar prices represent conversions from yen quotations at the rate of 290 yen=US\$1.

Source: *Minato Shimbu*.

Canada Names New Fisheries Research Board Members

Four new members, including two with background in oceanography and ocean technology, have been appointed to the Fisheries Research Board of Canada, reports Fisheries Minister Jack Davis. Inclusion of members associated with non-fisheries aspects of the marine sciences reflects a broadened advisory role undertaken by the Board, Mr. Davis said.

Since January 1973, fisheries research stations operated by the Board have been operated by the Fisheries and Marine Service, Environment Canada. The 18-member Fisheries Research Board, under Chairman, Dr. J. Robert Weir, now advises the Minister of Environment and Fisheries on research and development programs in both fisheries and marine sciences.

New appointees welcomed at a Board meeting in Ottawa earlier this month, are: Dr. J. E. Blanchard, 52, President of the Nova Scotia Research

Foundation at Dartmouth, N.S. Dr. Blanchard was Assistant Director of the Institute of Oceanography, Dalhousie University. D. N. Kendall, 59, Chairman of Kenting Ltd., Toronto, and a Director of Hermes Electronics Limited, Halifax, N.S. Mr. Kendall was a member of the Science Council Committee on Marine Science and Technology, and in industry participant on the Canadian Committee on Oceanography, representing the Marine Applications Council. Dr. G. H. Geen, 40, Chairman of the Department of Biological Sciences, Simon Fraser University, B.C. Dr. Geen served as a scientist with the International Pacific Salmon Commission and is a former biology professor at Dalhousie University. I. H. Langlands, 57, Vice-President (Development), National Sea Products Limited, Halifax, N.S. Mr. Langlands is also a Director of the Fisheries Council of Canada. The new members will serve five-year terms of office.

Japan Fish Agencies Tell New Directors

The Japanese Overseas Fisheries Cooperative Agency (a government subsidized special corporation) on February 15, 1974 appointed Mr. Iwao Arakatsu as executive director of the organization. Mr. Arakatsu, former director of the Fisheries Agency, succeeded Mr. Iwao Fujita (president, Japan Fisheries Association) who had been temporarily serving as the executive director. The organization was formed in June 1973 primarily to provide financial assistance in connection with the promotion of overseas fishery cooperation with foreign countries. The corporation was originally proposed to be organized as a government agency and named International Fisheries Cooperative Agency. The government has granted 2,500 million yen (US\$8.6 million, based on 290 yen=US\$1) in subsidy for the organization's first year projects.

The Minister of Agriculture and Forestry of Japan on January 12,

1974 announced the appointment of Mr. Yoshihide Uchimura, 52, as the new director of the Fisheries Agency, replacing Mr. Iwao Arakatsu. The new director is a graduate of the University of Tokyo's Economics Department and entered the Ministry of Agriculture and Forestry in 1945. He was formerly chief of the Ministry's Economics Bureau and at one time had served with the Fisheries Agency as technical official of the Fisheries Administration Division.

Sources: *Suisan Tsushin* and *Suisan Keizai Shimbun*.

Scientist Believes Japan Skipjack Catch Near Maximum Limit

The skipjack tuna catch off the Japanese home islands and in the "southern area" (between the equator and lat.24°N in the western Pacific) have approached close to the maximum level of yield, according to Dr. Kohei Kasahara, Chief, Tuna Research Section, Tohoku Regional Fisheries Research Laboratory of the Fisheries Agency. In his paper, entitled "Skipjack Tuna Fishery and Resource," presented at the annual tuna conference held in Shimizu in early February, Dr. Kasahara stated that 180,000 metric tons would be the maximum catch limit in the areas presently fished in the coastal and southern waters, in view of the declining trend in the catch per unit of effort.

He indicated that the increase in landings does not necessarily reveal a stable growth and attributed the high catch to longer trip lengths and an increase in the number of days fished. He suggested a maximum fishing effort (number of fishing days) of 110,000 days (at present 90,000 days) a year for the fleet. Dr. Kasahara's predicted maximum catch of 180,000 tons was not necessarily intended to sound a warning on the state of the skipjack resource but suggests the need to reexamine future plans for the skipjack fishery.

Source: *Suisan Keizai Shimbun*.

Newfoundland To Host Fisheries Exposition

An international Fisheries Exposition is scheduled for St. John's, Newfoundland, Canada, on September 16-20, 1974. The exposition, which will host exhibitors from around the world involved in all aspects of the commercial fishing industry, is being held by the Province of Newfoundland, Canada, as part of the Province's observance of the 25th Anniversary of joining the Dominion of Canada.

The exposition is being broken down into several sections, one of which displays and demonstrates actual boat equipment, trawlers, factory ships, freezer ships, designs, etc. A second area is set aside for processing equipment of all types and a third area will house a display of equipment for the shipping and handling of processed fish products. Exhibitors from as far away as Japan, Sweden and Peru will take part, as will many Canadian and Newfoundland companies.

To promote the use of fish products, international chefs from Canada, Cuba, France, Germany, the United States, Switzerland, Japan and other countries will enter a competition for the preparation of fish dishes.

Shipbuilders will exhibit the designs of their latest models of trawlers and druggers, and demonstrations of the latest fish filleting, skinning and cleaning equipment, as well as practical demonstrations of newly developed fishing and processing methods from around the world are scheduled. For more information contact Fisheries Exposition, P.O. Box 4125, Harvey Road Post Office, St. John's, Newfoundland, Canada.

USSR-Norway Fishing Conflicts Reported

Conflicts between the Soviet Union and Norway over the herring and cod fisheries in the Norwegian and

Barents Seas are being reported in the Norwegian press. The cod problem arose when the Soviet Union declined to sign a draft agreement with Great Britain and Norway which had been negotiated in December, 1973, and was to be ratified in early 1974. Since the 1974 cod fishing season began March 1, the Norwegians are concerned by this development, and fear that cod resources in Arctic waters off Norway's coast will be depleted unless strict conservation measures are taken immediately.

An agreement on herring fishing, already in force between Norway, Iceland, and the USSR, prohibits the catch of mature herring in the Barents Sea, Norwegian Sea, and waters in the vicinity of the Faroe Islands, except when connected with scientific research on the condition and migration patterns of the stocks. Norwegian fishermen have reported 6 Soviet medium trawlers catching and salting "large herring" in waters off the Lofoten Islands. These islands are located in the Norwegian Sea off Norway's northwest coast in an area closed to fishing for mature, spawning herring. The Soviets claim that they are only studying the herring fishery there, but the Norwegians believe that the amount of herring being taken exceeds that which would be necessary for research, and therefore have charged the Soviets with violation of the agreement, according to a report in *Aftenposten*.

The Soviet reluctance to sign the draft agreement on cod fishing has both puzzled and annoyed Norwegian fisheries officials. The tripartite herring agreement was concluded on February 25, 1972 and was to be renegotiated before December 31 of the same year. Presumably, the agreement was extended at that time, and thus would have to be renegotiated in December 1973, probably at the same meeting of Norwegian and Soviet fishery officials which negotiated the draft agreement on cod fishing.

The 1972 herring agreement stipulates that no "mature herring spawn-

ing in the spring" are to be harvested in certain Statistical Regions of the Barents Sea, Norwegian Sea, and waters in the vicinity of the Faroe Islands as designated by the International Council for the Exploration of the Sea. The full text of the 1972 agreement is available on request from the NMFS International Activities staff.

The Norwegian suspicion, that
Fishery Notes

Boats Before Wives for Pt. Judith Fishermen

Ask a Point Judith fisherman what's the worst thing that could happen to him and he will probably mention the loss of his boat before the loss of his wife.

At least that is what two University of Rhode Island social scientists found when they conducted a comparison study of a group of fishermen and a group of mill workers. The conclusions of Dr. Carl Gersuny, a sociologist, and Dr. John J. Poggie, Jr., an anthropologist, are reported in the most recent issue of *Maritimes*, quarterly magazine of the Graduate School of Oceanography at URI, Kingston.

"When we asked the fishermen and mill workers, 'What is the worst thing that could happen to you?' the most frequent response for both groups was the individual's own death or serious illness, while the second most frequent response was 'loss of boat' among fishermen and 'loss of wife' among mill workers." The social scientists said, however, that fishermen's wives need not be unduly alarmed by this because their loss was the third most frequent response of their husbands.

The research conducted by Dr. Gersuny and Dr. Poggie involves much more than pinning down fishermen's priorities. By understanding the subculture of fishermen, they say, it will become more feasible to design workable programs for dealing with social problems facing fishermen and fishing communities. Their research was supported by the URI Sea Grant Program, which is funded by the

what the Soviets defend as research may in fact be a fishing operation, seems to be strengthened by Norwegian fishermen's observations of herring being salted on the Soviet trawlers. Soviet research vessels normally do not process large quantities of landed fish.

While it is true that many Soviet research vessels are medium side

National Oceanic and Atmospheric Administration.

They have found that kinship plays a more important role in the occupational life of fishermen than in most land-bound occupations, including mill workers. "Family relations," they said, "help determine who fishes and with whom." The social scientists have reasoned that if access to commercial fishing is ever limited to prevent excessive exploitation of stocks, the role of kinship in fishing communities must be taken into consideration.

Publications

University of Rhode Island Publications

Socioeconomic research issues in the development of world fisheries is the subject of a 12-page technical report from the International Center for Marine Resource Development at the University of Rhode Island. Research issues dealing with commercial fisheries, artisan coastal and inland fisheries, and the interrelations of agriculture and fisheries are covered in the pamphlet, "**Socio-Economic Research Issues in Fisheries Development**," based on a workshop involving university and governmental personnel held at URI in 1972.

The publication, listed as Marine Technical Report No. 13, notes that information on fishing and fishermen in the developing countries is scarce; what is available is often less reliable than data for other non-urban sectors. Some issues that now seem critical, the report states, are market development and modernization, a systems

trawlers (the same type that the Norwegian fishermen reported off the Lofoten Islands), it is considered unlikely that 6 such vessels would have been conducting research in the same location. Normally, Soviet fishery research vessels are assigned large marine areas in which to conduct their research, and they usually operate singly.

Fishermen may find a greater measure of happiness than people in other occupations, Dr. Gersuny and Dr. Poggie said. Fishermen are among the least alienated of workers—meaning they do not feel they are in the rat race of a meaningless job and do not have a sense of powerlessness over their conditions of work. The reason, Drs. Gersuny and Poggie say, is because of "their close ties to the finished product, their high level of control over work and product, and the fact that a fisherman has a far better chance of becoming a boat owner than has a textile worker of becoming a mill owner."

management approach to river and coastal lagoon development, and the integration of fisheries with agricultural enterprises.

"Fisheries development can help solve employment and income equity problems in many nations of the world, but not unless more attention is concentrated and more research is done on economic aspects of fisheries development," it states. Free copies are available from the Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882.

Rhode Island's Ocean Sands, Marine Technical Report No. 10, published by the University of Rhode Island Sea Grant Program, predicts that an offshore sand and gravel mining industry may soon develop in Rhode Island waters and says the state should be ready to cope with it.